

## **REMARKS**

The Examiner is thanked for the thorough examination of the present application. The Office Action, however, continued to reject all claims.

### **Voice Message Exchange with the Examiner**

On or about July 25, 2007, the undersigned tried to reach the Examiner by phone to discuss the outstanding rejections in this application. The undersigned did not reach the Examiner directly, but did leave a voice message explaining that the application of the secondary reference. Specifically, the undersigned noted that there was no teaching or suggestion in the cited art for at least the claimed feature of the liquid flowing into a chamber through porous material. In this regard, the undersigned noted that the “porous material” in Tachihara was actually a spongy/porous material that was in an ink reservoir of an ink-jet cartridge, and not in a chamber of a printhead, through which the ink flows.

The Examiner attempted to contact the undersigned in return, but did not reach him directly. In a responsive voice message left by the Examiner, the Examiner acknowledged that the application of the secondary reference was misplaced, but indicated that he felt that the teaching for which the secondary reference was applied could be found in another reference.

### **Any Ensuing Office Action Should be Non-FINAL**

Independent claims 1, 16, and 19 have not been amended herein. Based on the voice message exchange with the Examiner, it is the undersigned’s understanding that

the present rejections will be withdrawn, as the application of the secondary reference is misplaced. As set forth below, Applicant believes that all claims patently define over the cited art. Should any ensuing Office Action advance new rejections of the claims (claims not amended herein), any such Office Action should be made non-FINAL.

### **Status of Claims**

Claims 1-12 and 15-21 remain pending in this application after entry of the foregoing amendments. Claim 11 is amended to more clearly identify a novel and non-obvious feature of the chamber. Support for the amended feature(s) can be found in FIG. 5 of the application. Accordingly, Applicant submits that no new matter has been added. Reconsideration of the application, as amended, is respectfully requested.

### **Discussion of Rejections**

Claim 1 stands rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Chen et al (US 6,412,918) in view of Tachihara et al (US Pub. 2001/0043243). Applicant respectfully requests reconsideration of the rejection for at least the reasons discussed below.

Independent claim 1 recites:

1. A method for manufacturing an inkjet printhead comprising:
  - providing a substrate and a porous material;
  - forming a heating layer on the substrate;
  - forming a conductive layer on the substrate, wherein the conductive layer conducts a current to the heating layer, and comprises a stepped portion used as a heating area, wherein the heating area is defined by the conductive layer and the heating layer;
  - forming a chamber for storing liquid above the heating area, wherein the chamber includes a first side and a second side, the first side is overlapped with the heating area, the second side is connected

to the first side, and the chamber is formed with an exit, from which the liquid is dispensed, on the second side; and  
***placing the porous material on the chamber so that the liquid flows into the chamber therethrough.***

(*Emphasis added*). Claim 1 patently defines over the cited art for at least the reason that the cited art fails to disclose the features emphasized above.

Chen et al discloses a back-shooting inkjet print head comprising a substrate 10, a thermal resistor layer 24, a conductive layer 26, and a plurality of ink channels 32. Note that the ink channels are covered by a nozzle plate 40 (see column 1, lines 38-39). As the examiner stated, Chen et al does not disclose the porous material on the chamber so that the liquid flows into the chamber therethrough.

Tachihara et al discloses an ink-jet-head cartridge 17 comprising a fibrous or porous ink absorbing member in order to hold ink. That is, in Tachihara et al, the porous ink absorbing material is used to hold ink, but the ink does not flow into the ink-jet-head cartridge 17 through the porous ink absorbing material. Thus, Tachihara et al does not disclose the porous material on the chamber so that **the liquid flows into the chamber therethrough**.

Neither Chen et al nor Tachihara et al teach placing the porous material on the chamber so that the liquid flows into the chamber therethrough. Thus, the prior references do not teach or suggest all the claim limitations. For at least this reason, claim 1 patently defines over the cited art.

Claims 2 and 3 stand rejected under 35 U.S.C. 103(a) as allegedly obvious over Chen et al as modified by Tachihara et al as applied to claim 1 above, and further in view of Park et al (US 6,702,428). Claim 4 is rejected under 35 U.S.C. 103(a) as

allegedly unpatentable over Chen et al as modified by Tachihara et al and Park et al as applied to claim 1 above, and further in view of Singh et al (US 6,210,522). Claims 5-7 are rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Chen et al as modified by Tachihara et al as applied to claim 1 above, and further in view of Park et al and Song et al (US Pub. 2004/0100535). Claim 8 is rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Chen et al as modified by Tachihara et al, Park et al and Song et al as applied to claim 1 above, and further in view of Murai et al (US Pub. 2003/0227518). Claim 9 is rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Chen et al as modified by Tachihara et al, Park et al and Song et al as applied to claim 1 above, and further in view of Takeda et al (US Pub. 2002/0054201). Claim 10 is rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Chen et al as modified by Tachihara et al, Park et al and Song et al as applied to claim 1 above, and further in view of Singh et al (US 6,210,522).

Applicant submits that these rejections should be withdrawn. As Chen et al and Tachihara et al do not disclose all the limitations of independent claim 1, dependent claims 2-10 patently define over the cited art for at least the same reason.

Claims 11 and 15 stand rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Chen et al (US 6,412,918) in view of Tachihara et al (US Pub. 2001/0043243). Applicant respectfully requests reconsideration and withdrawal of the rejections for the reasons discussed below.

Claim 11, as amended herein, recites:

11. An inkjet printhead comprising:  
a substrate;

a heating layer disposed on the substrate to dispense liquid;  
a conductive layer disposed on the substrate to conduct a current to the heating layer, wherein the conductive layer comprises a stepped portion used as a heating area, wherein the heating area is defined by the conductive layer and the heating layer;

***a polymer disposed on the substrate;***

***a porous material disposed on the polymer; and***

***a chamber, formed by the polymer and porous material,*** having a first side and a second side, wherein the first side is overlapped with the heating area, the second side is connected to the first side, and the chamber is formed with an exit, from which the liquid is dispensed, on the second side, and the liquid flows into the chamber through the porous material.

(*Emphasis added.*) Independent claim 11 patently defines over the cited art for at least the reason that the cited art fails to disclose the features emphasized above.

As reflected above, claim 11 defines an inkjet printhead comprising a substrate, a heating layer, a conductive layer, a polymer, a porous material, and a chamber. The heating layer is disposed on the substrate to dispense liquid. The conductive layer is disposed on the substrate to conduct a current to the heating layer, and comprises a stepped portion used as a heating area. The heating area is defined by the conductive layer and the heating layer. Significantly, ***the polymer is disposed on the substrate. The porous material is disposed on the polymer. The chamber is formed by the polymer and the porous material,*** and has a first side and a second side. The first side is overlapped with the heating area, and the second side is connected to the first side. The chamber is formed with an exit, from which the liquid is dispensed, on the second side. ***The liquid flows into the chamber through the porous material.***

As the Office Action acknowledged, Chen et al does not disclose the porous material. Moreover, Tachihara et al does not disclose that ***the chamber is formed by***

***the polymer and the porous material.*** (this point was acknowledged by the Examiner in a voice mail message).

Indeed, neither Chen et al nor Tachihara et al teach that ***the chamber is formed by the polymer and the porous material.*** Thus, the cited references (even if properly combined) do not teach or suggest all the claim limitations of claim 11. For at least this reason, the rejection of claim 11 should be withdrawn. Since Chen et al and Tachihara et al do not disclose all the limitations of claim 11, dependent claim 15 patently defines over the cited art for at least the same reason.

Claim 12 is rejected under 35 U.S.C. 103(a) as allegedly obvious over Chen et al as modified by Tachihara et al as applied to claim 11 above, and further in view of Park et al. Since Chen et al and Tachihara et al do not disclose all the limitations of claim 11, claim 12 patently defines over the cited art for at least the same reason.

Claims 16 and 18 are rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Chen et al (US 6,412,918) in view of Tachihara et al (US Pub. 2001/0043243).

Applicant respectfully requests reconsideration of the rejection for the reasons discussed below.

Claim 16 recites:

16. A method for manufacturing an inkjet printhead comprising:  
providing a substrate, a porous material, and a nozzle plate;  
forming a heating layer on the substrate;  
forming a conductive layer on the substrate, wherein the conductive layer  
conducts a current to the heating layer, and comprises a stepped  
portion used as a heating area, wherein the heating area is defined  
by the conductive layer and the heating layer;  
***forming an adhesive layer on the conductive layer;***

***placing the porous material on the adhesive layer to form a chamber for storing liquid, wherein the liquid flows into the chamber through the porous material***, the chamber includes a first side and a second side, the first side is overlapped with the heating area so that the liquid in the chamber is located above the heating area, and the second side is connected to the first side; and ***adhering the nozzle plate to the second side of the chamber***, wherein the nozzle plate includes at least one orifice.

(*Emphasis added.*) Claim 17 patently defines over the cited art for at least the reason that the cited art fails to disclose the features emphasized above.

The Office Action did not specifically mention that Chen et al and Tachihara et al disclose or teach certain of the claimed characteristics (e.g., forming an adhesive layer on the conductive layer, and adhering the nozzle plate to the second side of the chamber). That is, these claimed features appear to have been overlooked by the Office Action (or at least not set out therein). Accordingly, the rejection is facially deficient and should be withdrawn. Should an ensuing Office Action maintain the rejection of claim 16 and provide additional discussion with respect to these claimed features, any such rejection will constitute new grounds, and should be set forth in a non-FINAL Office Action.

Indeed, Applicant submits that neither Chen et al nor Tachihara et al teach the characteristics of forming an adhesive layer on the conductive layer and adhering the nozzle plate to the second side of the chamber. Thus, the cited references do not teach or suggest all the claim limitations. For at least this reason, the rejection of claim 16 should be withdrawn. Since Chen et al and Tachihara et al do not disclose all the limitations of independent claim 16, dependent claim 18 patently defines over the cited art for at least the same reason.

Claim 17 is rejected under 35 U.S.C. 103(a) as allegedly obvious over Chen et al as modified by Tachihara et al as applied to claim 16 above, and further in view of Park et al. Since Chen et al and Tachihara et al do not disclose all the limitations of claim 16, claim 17 patently defines over the cited art for at least the same reason.

Claim 19 is rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Chen et al (US 6,412,918) in view of Tachihara et al (US Pub. 2001/0043243). Applicant respectfully traverses the rejection made by the Examiner for the reasons discussed below.

Independent claim 19 recites:

19. An inkjet printhead comprising:  
a substrate;  
a heating layer disposed on the substrate to dispense liquid;  
a conductive layer disposed to conduct a current to the heating layer,  
wherein the conductive layer comprises a stepped portion used as  
a heating area, wherein the heating area is defined by the  
conductive layer and the heating layer;  
an adhesive layer disposed on the conductive layer;  
a porous material, disposed on the substrate, including a chamber,  
wherein the liquid flows to the chamber through the porous  
material, the chamber has a first side and a second side, the first  
side is overlapped with the heating area so that the liquid in the  
chamber is located above the heating area, and the second side is  
connected to the first side; and  
a nozzle plate, disposed on the second side of the chamber, including at  
least one orifice.

*(Emphasis added.)* Claim 19 patently defines over the cited art for at least the reason that the cited art fails to disclose the features emphasized above.

As reflected above, claim 19 defines an inkjet printhead comprising a substrate, a heating layer, a conductive layer, an adhesive layer, a porous material, and a nozzle plate. The heating layer is disposed on the substrate to dispense liquid. The



conductive layer is disposed to conduct a current to the heating layer, and comprises a stepped portion used as a heating area. The heating area is defined by the conductive layer and the heating layer. ***The adhesive layer is disposed on the conductive layer.*** The porous material is disposed on the substrate, and includes a chamber. The liquid flows to the chamber through the porous material. The chamber has a first side and a second side. The first side is overlapped with the heating area so that the liquid in the chamber is located above the heating area, and the second side is connected to the first side. ***The nozzle plate is disposed on the second side of the chamber,*** and includes at least one orifice.

As noted above in connection with claim 16, the Office Action did not mention the features of ***the adhesive layer is disposed on the conductive layer,*** or ***the nozzle plate is disposed on the second side of the chamber,*** and therefore the rejection did not properly address these claim limitations.

Neither Chen et al nor Tachihara et al teach that ***the adhesive layer is disposed on the conductive layer*** or that ***the nozzle plate is disposed on the second side of the chamber.*** Thus, the prior references do not teach or suggest all the claim limitations. For at least this reason, claim 19 patently defines over the cited art.

Claims 20-21 have been newly added to further define certain novel embodiments of the invention. Support for these claims can be found in FIG. 7 of the application. Accordingly, these claims add no new matter to the application.

In claim 20, the chamber is formed by the metallic layer and the porous material. Neither Chen et al nor Tachihara et al teach that the chamber is formed by the metallic layer and the porous material.

For at least the foregoing reasons, all claims are believed to be in proper condition for allowance. Should the Examiner believe that a teleconference would be helpful to expedite the examination of this application, the Examiner is invited to contact the undersigned.

A credit card authorization is provided to cover the fee for the additional independent claim. No additional fee is believed to be due in connection with this submission. If, however, any additional fee is deemed to be payable, you are hereby authorized to charge any such fee to Deposit Account No. 20-0778.

Respectfully submitted,

/Daniel R. McClure/

By:

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